

SECTION 09385

DIMENSION STONE TILE

PART 1 - GENERAL

1.1 SUMMARY

- A. **This Section includes the following:**
 - 1. Dimension stone tile and related setting materials applied to treads, floors, countertops and walls.
 - 2. Stone base.
 - 3. Mortar, grout, and accessories.
 - 4. Cementitious backer units for application of tile.
- B. **Related Sections include the following:**
 - 1. Section 07920 - Joint Sealants: Sealing of stone expansion joints and where stone abuts plumbing fixtures, countertops, and items penetrating stone walls, wainscots, etc.

1.2 REFERENCES

- A. **Industry Standards:** The Industry Standards listed below refer to the latest date of issue or editions, unless otherwise indicated.
 - 1. ANSI A108.1 Installation of Ceramic Tile with Portland Cement Mortar.
 - 2. ANSI A108.10 Installation of Grout in Tilework.
 - 3. ANSI A118.4 Latex Portland Cement Mortar.
 - 4. ANSI A118.6 Ceramic Tile Grouts.
 - 5. ANSI A137.1 Standard Specifications for Ceramic Tile.
 - 6. ASTM C144 Aggregate for Masonry Mortar.
 - 7. ASTM C150 Portland Cement.
 - 8. TCA (Tile Council of America) Handbook for Ceramic Tile Installation.

1.3 SUBMITTALS

- A. **Product Data:** Submit manufacturer's specifications and installation (setting and grouting) recommendations for each type of product proposed.
- B. **Shop Drawings:** Show stone tile sizes, dimensions of tiled areas, joint patterns, bedding, and details showing relationship of tile units to adjacent work.
 - 1. Indicate locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
 - 2. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.
- C. **Samples for Initial Selection:** Manufacturer's standard Samples showing the full range of colors, textures, and patterns available for each type of stone tile indicated.
- D. **Samples for Verification:** Full-size units of each type of stone tile indicated; in sets showing the full range of variations expected in these characteristics.

- E. **Maintenance Data:** For stone tile to include in maintenance manuals specified in Division 1.

1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** An experienced installer who employs only workers trained in installing tile products similar to those required for this Project.
- B. **Supplier Qualifications:** A firm experienced in supplying products similar to those indicated for this Project and with a record of successful in-service performance.
- C. **Source Limitations for Stone Tile and base:** Obtain all types of stone tile through one source from a single manufacturer. Obtain each variety of stone, regardless of tile size and finish, from the same a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
- D. **Source Limitations for Setting and Grouting Materials:** Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- E. **Mockups:** Before installing stone tile, build mockups for each tile type required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
 - 2. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 3. Obtain Architect's approval of mockups before starting work.
 - 4. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. **Deliver materials** to Project site in factory wrappings, clearly labeled with identification of manufacturer and lot number. Store materials off the ground in a dry, warm, well-ventilated, weathertight location.
- B. **Comply** with manufacturer's written instructions for delivery, storage, and handling requirements.
- C. **Protection:** Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.6 PROJECT CONDITIONS

- A. **Environmental Limitations:** Do not install dimension stone tile until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained to comply with referenced standards and manufacturer's written instructions.
- B. **Ventilation:** Vent temporary heaters to exterior to prevent damage to work from carbon dioxide buildup.

- C. **Temperature:** Maintain temperatures at 50 deg F or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.7 SEQUENCING AND SCHEDULING

- A. **Sequence stone tile installation** with other work to minimize possibility of damage and soiling during remainder of construction period.

1.8 EXTRA MATERIALS

- A. **Deliver extra materials to Owner.** Furnish extra full-sized stone tiles matching installed tile in a quantity equal to 1 percent of the amount of each tile type installed, packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Available Varieties and Sources:** Subject to compliance with requirements, stone varieties that may be incorporated into the Work include, but are not limited to, those indicated in the schedules in the Architectural Drawings.
 - 1. Where two or more stone types listed in the Finish Schedule are identical except for size or finish, provide the same variety from the same source for each type.
 - 2. Where threshold types are identical to tile types listed in the Stone Tile Schedule for size or finish, provide the same variety from the same source for each type.
- B. **Approved Manufacturers for Stone Accessories:** Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Acrylic Emulsion for Latex Portland Cement Mortars and Grouts:
 - a. BOSTIK CONSTRUCTION PRODUCTS DIV.
 - b. C-CURE CHEMICAL CO.
 - c. LATICRETE INTERNATIONAL, INC.
 - d. MAPEI, INC.

2.2 STONE PRODUCTS

- A. **Provide stone** tiles that are free of cracks, seams, starts, and other defects impairing their function for use indicated.
- B. **Stone Type:** Burlington Stone. See Interior Finish legend for colors and finishes.

2.3 MORTAR

- A. **Portland Cement Mortar Bed Method:** Mortar consisting of ASTM C150 Portland Cement with latex additive, ASTM C144 sand and potable water complying with quality established by ANSI A108.1.
 - 1. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82, except for minimum wire size.
- B. **Thin-Set Method:** ANSI A118.4, Latex Portland Cement Mortar.

2.4 GROUT

- A. **Latex Portland Cement Grout:** ANSI A118.6, Latex Portland Cement Mortar, manufacturer's standard latex additive, grout color as selected by Architect.
1. Use sanded grout for tile joints 1/8 inch and wider.
 2. Use unsanded grout for tile joints less than 1/8 inch wide.

2.5 CEMENTITIOUS BACKER UNITS

- A. **Approved Products/Manufacturers:** Subject to compliance with requirements provide one of the following:
1. "DUROCK Interior Cement Board"; UNITED STATES GYPSUM CO.
 2. "DomCrete Cementitious Tile-Backer Board"; DOMTAR GYPSUM.
 3. "Util-A-Crete Concrete Backer Board"; FINPAN, INC.
 4. "Glas-crete Cementitious Backer Board"; GLASCRETE, INC.
 5. "Wonder-Board"; GLASCRETE, INC.
- B. **Description:** Provide cementitious backer units complying with ANSI A118.9, in maximum lengths available to minimize end-to-end butt joints, and as follows:
1. 5/8 inch, unless otherwise indicated on Drawings.
 2. Manufacturer's standard width, but not less than 32 inches.
- C. **Screw Fasteners:**
1. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.
- D. **Joint Treatment Material:** Provide materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
1. For filling joints and treating fasteners of cementitious backer units for application of stone tile, use materials recommended by the board manufacturer.
- E. **Joint Tape for Cementitious Backer Units:** Polymer-coated, open glass-fiber mesh.
- F. **Joint Compound for Cementitious Backer Unit:** Material recommended by cementitious backer unit manufacturer.

2.6 MIXING MORTARS AND GROUT

- A. **Mixing:** Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

2.7 FABRICATION

- A. **Polished Finish:** Finish tile faces to produce sharp reflections where reflected images of overhead fluorescent tubes have straight lines without visible distortion when viewed at arm's length.

- B. **Honed Finish:** Finish tile faces to produce a smooth, nonreflective surface similar to that produced by grinding with a 400- to 1200-grit abrasive; with a gap not exceeding 0.005 inch, when faces are tested for flatness with a 24-inch straightedge.
- C. **Sand-Rubbed Finish:** Finish tile faces to produce a uniform, fine-textured surface similar to that produced by grinding with a 40-grit abrasive; with a gap not exceeding 1/32 inch, when faces are tested for flatness with a 24-inch straightedge.
- D. **Thermal Finish:** Finish faces by thermal shock to produce a uniform, coarse-textured surface; with a gap not exceeding 3/16 inch, when faces are tested for flatness with a 24-inch straightedge.
- E. **Facial Dimensions:** Do not vary facial dimensions from specified dimensions by more than plus or minus 1/64 inch for tiles with polished or honed faces; or plus or minus 1/32 inch for tiles with sand-rubbed, or thermal-finished faces.
- F. **Thickness of Stone Tiles with Smooth Finish (thin-set application):** Do not vary from specified thickness by more than plus or minus 1/64 inch.
- G. **Thickness of Stone Tiles with Natural-Cleft or Thermal Finish:** Do not vary average thickness of each tile from specified thickness by more than plus or minus 1/16 inch.
- H. **Thickness of Stone Tiles with Natural-Cleft or Thermal Finish:** Do not vary average thickness of each tile from specified thickness by more than plus or minus 1/32 inch.
- I. **Joint Surfaces:** Except for specified beveled or eased edges, if any, dress joint surfaces square for full depth of tile.
- J. **Backs of Pieces:** Dress backs of pieces smooth and flat. When tested with a 24-inch straightedge, gap shall not exceed 1/32 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Examine substrates,** areas, and conditions after installation of cementitious backer board where stone tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.
- B. **Acceptance:** Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 CEMENTITIOUS BACKER BOARD

- A. **Tile Backer Board:** At wall tile applications, install backer board over metal studs in accordance with manufacturer's instructions. Tape joints and corners; cover with skim coat of dry-set mortar to a featheredge.
 - 1. **Base for Stone Tile:** Finish cementitious backer units to comply with unit manufacturer's directions.

3.3 PREPARATION

- A. **Remove surface-applied finishes and adhesives.**
- B. **Remove coatings,** including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- C. **Blending:** For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.4 INSTALLATION, GENERAL

- A. **ANSI Tile Installation Standard:** Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.
- B. **TCA Installation Guidelines:** TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.
- C. **Workmanship:** Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
 - 1. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
 - 2. Match tiles within each space by selecting tiles to achieve uniformity of color and pattern. Reject or relocate tiles that do not match color and pattern of adjacent tiles.
 - 3. Mix tiles to achieve a uniformly random distribution of color shadings and patterns.
 - 4. Wipe backs of tiles with a damp cloth to remove dirt and dust before units are installed.
 - 5. Set individual stone tiles into setting material, taking care to maintain accurate joint alignment and spacing. Beat-in tiles to obtain 80 percent contact between back of tile and setting material.
- D. **Jointing Pattern:** Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on base, walls, and trim are same size. Lay out tile work and center

tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.

- E. **Expansion Joints:** Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 2. Prepare joints and apply sealants to comply with requirements of "Section 07920 - Joint Sealants."
- F. **Grouting:** Grout tile to comply with the requirements of ANSI A108.10 for latex portland cement grout.
- G. **Mildew-Resistant Sealant:** Use where tile abuts plumbing fixtures, countertops, and items penetrating tile walls, wainscots and bases, such as pipes and outlets. Refer to "Section 07920 - Joint Sealants".

3.5 INSTALLATION TOLERANCES

- A. **Finished Tile Work:** Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
 - 1. Joints shall be uniform in width; straight, level, plumb and aligned in both directions; neatly grouted without irregularities, holes and gaps.
 - 2. Tile, trim, and stone thresholds shall be the colors, patterns and textures indicated for each location, and shall match the approved samples.
 - 3. Cut edges of tile and trim units shall be concealed by joint grout, sealant, or overlapping escutcheons of penetrating items.
- B. **Variation from Plumb:** For vertical joints, external corners, and other conspicuous lines, do not exceed 1/8 inch in 8 feet.
- C. **Variation in Level:** For horizontal joints and other conspicuous lines, do not exceed 1/4 inch in 20 feet, or 1/2 inch maximum.
- D. **Variation in Plane between Adjacent Units (Lipping):** Do not exceed the following differences between faces of adjacent units as measured from a straightedge parallel to the tiled surface:
 - 1. Units with Polished Faces: 1/64 inch.
 - 2. Units with Honed Faces: 1/64 inch.
 - 3. Units with Sand-Rubbed Faces: 1/32 inch.
 - 4. Units with Thermal-Finished Faces: Depth of thermal finish or 3/16 inch, whichever is less.
 - 5. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or one-fourth of nominal joint width, whichever is less.

3.6 PROTECTION

- A. Prohibit traffic from installed stone for a minimum of 72 hours.
- B. Protect installed stonework during construction with nonstaining kraft paper. Where adjoining areas require construction work access, cover stonework with a minimum of 3/4-inch (20-mm) untreated plywood over nonstaining kraft paper.

3.7 ADJUSTING AND CLEANING

- A. **Remove and replace** material that is stained or otherwise damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
 - 1. Remove latex portland cement grout residue from tile as soon as possible.
- B. **Protection:** Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration.
 - 1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
- C. **Before final inspection,** remove protective coverings and rinse with neutral cleaner from tile surfaces.

3.8 DIMENSION STONE TILE SCHEDULE

- A. See INTERIOR FINISH LEGEND on the Drawings

3.9 STONE BASE SCHEDULE

- A. See INTERIOR FINISH LEGEND on the Drawings

END OF SECTION